FAA | AVIATION NEWS

DECEMBER 1962

F E D E R A L A V I A T I O N A G E N C Y

FAA | AVIATION NEWS
FEDERAL AVIATION AGENCY

DECEMBER 1962

IMPROVING OUR SKILLS

The National Aviation System requires constant improvement to meet the increasingly complex demands of American aviation. This calls for continual upgrading of the skills, techniques and equipment used by both the operators and the users of the system.

A few examples of this constant improvement effort are outlined in this issue. Air Route Traffic Control Centers are being modernized and their control areas are being streamlined to make them more efficient, thus enhancing safety. A general aviation transponder (GAT) is being evaluated as a means of helping controllers sort out and manage air traffic. And a program is under way to improve the speaking techniques of controllers in order to increase the clarity and utility of communications.

This process is showing encouraging progress with airmen, too. One good example is the number of pilots who have taken courses recently to acquire at least minimum instrument flying skill so they can retreat safely from hazardous weather conditions. Several aviation organizations have established and promoted courses in conjunction with FAA's Blue Seal program to encourage this trend.

The FAA will be continuing and intensifying this effort as it moves ahead with modernization of the national airspace utilization system under the Project Beacon principles and with its other programs. Airmen will be called upon to make a parallel effort to keep their skills abreast of developing technology, both on the ground and in the air.

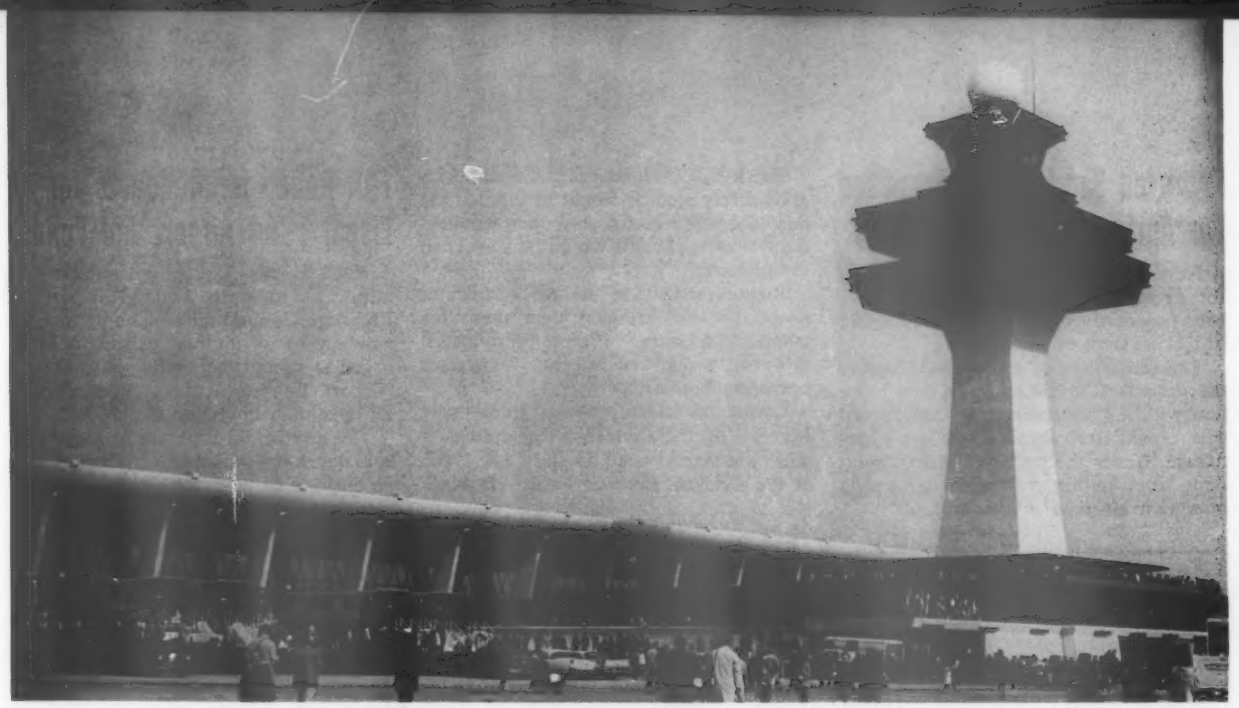
The challenge of the future lies before the whole aviation community. Government, industry and airmen must be united in a well integrated drive not only to keep pace with growing traffic but also to develop a system that is better—and thus safer—than the one we have now. Understanding, cooperation and determination will make key contributions to the success of such an effort.

CONTENTS

3 MASTER PLAN READIED FOR AIRSPACE UTILIZATION OVER MAJOR AREAS
4 IMPROVED SAFETY RULES PROPOSED FOR AGRICULTURAL AIRCRAFT FLIERS
4 FAA READY FOR REQUESTS FOR FISCAL 1964 AIRPORT AID FUNDS
4 RECODIFIED SAFETY REGULATIONS RAPIDLY ACQUIRING JET AGE LOOK
5 GUIDE PUBLISHED FOR DISASTER CONTROL AT NATION'S AIRPORTS
5 AIR DEFENSE IDENTIFICATION ZONE ESTABLISHED IN PUERTO RICO AREA
5 NEW AGENCY RULEMAKING POLICY INCREASES PUBLIC PARTICIPATION
5 FAA'S CONTROL TOWER OF THE FUTURE
6 RUNWAY ARRESTING GEAR TESTED
8 AIR ROUTE TRAFFIC CONTROL CENTER: VITAL LINK IN AIRSPACE SAFETY IS MODERNIZED
11 FLIGHT SERVICE SPECIALISTS QUALIFY AS CERTIFICATED WEATHER BRIEFERS
11 GENERAL AVIATION AIDS FAA IN EVALUATING NEW AIRBORNE TRANSPONDER
12 SAFETY FIRST—KEEP YOUR FUEL CLEAN
13 HOW DO THEY READ YOU?
14 FAA'S DISTRICT AIRPORT ENGINEER . . . EXPERT ASSISTANCE ON CALL
14 REAL LIFE "MOLT" NO RESEMBLANCE TO FICTIONAL COUNTERPART
15 LETTERS TO THE ADMINISTRATOR

COVER: Long range radar antenna, a key link in FAA's system of air traffic control (see page 8).

FAA AVIATION NEWS is published monthly by the Office of Public Affairs, Federal Aviation Agency, Washington 25, D.C., in the interest of aviation safety and to acquaint readers with the policies and programs of the Agency. Use of funds for printing this publication approved by the Director of the Bureau of the Budget January 25, 1962. Subscription rates: U.S. $1.50 a year, foreign $2.00 a year, single copies 15 cents. Send check or money order (no stamps) to Superintendent of Documents, Government Printing Office, Washington 25, D.C.



Dulles International Airport, a new gateway to the Nation and a new addition to the Washington metropolitan area aviation complex. Visitors on dedication day saw Eero Saarinen's architecturally striking terminal building and tower and an innovation in passenger convenience—the mobile lounge *(background)*.

MASTER PLAN READIED FOR AIRSPACE UTILIZATION OVER MAJOR AREAS

An FAA master plan for optimum utilization of the airspace above major U. S. metropolitan areas should be completed early next year and will be adaptable to every region of the country.

Announcement of the three-phase plan was made last month by Administrator N. E. Halaby in a speech to the Metropolitan Washington (D. C.) Board of Trade on the eve of the dedication of Dulles International Airport.

Halaby said that two of the plan's three phases had already been successfully applied to the Washington, D. C., metropolitan area, and that a final report on Phase Three would be submitted to him by FAA planners sometime in January. A vexing problem in many regions of the country, Halaby pointed out, is lack of general aviation facilities to encourage the balanced growth of general as well as commercial civil aviation. In most of these areas, he noted, general aviation is actually the dominant activity.

The reasons for this unbalanced development of civil aviation facilities have been complex, Halaby said, ". . . but I think it fair to say that the development of civil aviation . . . for the entire country . . . has been largely left to chance, rather than to effective and comprehensive regional planning. This is in sharp contrast to the urgent needs of civil aviation today and tomorow.

"More than any other means of transportation," he continued, ". . . aviation needs planning, integrated properly with overall metropolitan master plans. . . ." In the case of Washington, Halaby said, FAA planning had been integrated with Washington's "The Year 2000 Report," and with every other planning group that was or could be affected.

Phase One of the study determined what immediate improvements could be made in the area's existing airports and facilities. Phase Two took the many recommendations of the Beacon Report and used them in developing an airspace utilization and operational plan for the Washington area. Basically, this phase involved improvements to help assure the separation of aircraft according to capability and mission.

Phase Three has as its goal the determination of the optimum number, location and utilization of airports, facilities and airspace in the Washington area.

President Kennedy dedicates Dulles International.

"First, we had to arrive at the number and location of needed military, commercial, general aviation airports, and heliports," Halaby said. Master planning was then based on this. A primary goal was to place any individual living in a region within 30 minutes of a general aviation airport. In the Washington study, this worked out, tentatively, to four general aviation airports in addition to airports such as Baltimore's Friendship and Washington National and Dulles International.

In a key statement, the Administrator said: "FAA strongly believes in public ownership of such airports in order to assure their continued existence despite the blandishments of the parking lot and shopping center entrepreneurs. We also believe that counties and municipalities should determine future airport sites well in advance—FAA planners will be more than happy to help—and that they should be acquired and protected early."

In other recent statements, Halaby:

- Offered to EUROCONTROL nations the use of FAA facilities at its National Aviation Facilities Experimental Center (NAFEC), Atlantic City, N.J., "as schedule time permits."
- Announced a speed-up in submitting FAA's supersonic transport recommendation to the President from next summer to "the end of the year" because of greatly increased SST activity overseas.

Improved Safety Rules Proposed For Agricultural Aircraft Fliers

New certification and operating rules for agricultural aircraft operators have been proposed by FAA to improve safety in this segment of aviation.

The proposed new rules would replace the current "Certificate of Waiver" system with a standard commercial or private agricultural aircraft operator's certificate. Under the present system, deviations from certain regulations governing minimum altitudes are authorized.

Holders of valid waiver certificates with good safety records would be granted the new operating certificates upon application. New applicants would be subject to examination.

Requirements for private certificates would be less stringent than those for commercial ones. Private certificates, however, would be subject to greater operating limitations.

Comments on the proposed rules—new Part 55 of the Civil Air Regulations—will be accepted until January 15, 1963, at the Dockets Section, FAA, Washington 25, D. C.

FAA Ready for Requests for Fiscal 1964 Airport Aid Funds

FAA is now accepting requests for airport aid under the Federal Airport Aid Program. Communities planning to build new airports or improve existing ones are urged to submit their requests to District Airport Engineer offices promptly, but no later than February 15, 1963.

The airport aid program is designed to help develop a nationwide system of public airports to meet the needs of all segments of civil aviation.

RECODIFIED SAFETY REGULATIONS RAPIDLY ACQUIRING JET AGE LOOK

FAA's recodification project to streamline safety regulations is proceeding on schedule, with next August set as target date for completion.

The program, designed to make the Agency's regulatory material simpler to use and easier to understand, was initiated in 1961.

When completed, the complex of 123 rules and regulations once comprising the Agency's safety regulatory material will be replaced by 60 simplified, easily understood rules and regulations. This is being achieved by elimination of duplicate, self-explanatory and obsolete material.

Not satisfied with simplifying the regulations, the Agency also has made it easier to handle the regulatory material by issuing the recodified regulations in an 8 x 10½ inch loose-leaf form. Future amendments thus can easily be incorporated, simply by replacing the appropriate sheets.

To date, with seven of the eleven subchapters already completed, FAA has completely eliminated some parts. cut about half the number of words, reduced 1,200 definitions for aviation terms to 102, and achieved greater accuracy and clarity.

Subchapters completed to date are:

Subchapter A—Definitions
- Part 1—Definitions and Abbreviations

Subchapter B—Procedural Rules
- Part 11—General Rule-Making Procedures
- Part 13—Enforcement Procedures

Subchapter D—Airmen
- Part 61—Certification: Pilots and Flight Instructors
- Part 63—Certification: Flight Crewmembers Other Than Pilots
- Part 67—Medical Standards and Certification

Subchapter E—Airspace
- Part 71—Designation of Federal Airways, Controlled Airspace, and Reporting Points
- Part 73—Special Use Airspace
- Part 75—Establishment of Jet Routes
- Part 77—Notice of Construction or Alteration Affecting Navigable Airspace

Subchapter H—Schools and Other Certified Agencies
- Part 141—Pilot Schools
- Part 143—Ground Instructors
- Part 145—Repair Stations
- Part 147—Mechanic Schools
- Part 149—Parachute Lofts

Subchapter I—Airports
- Part 151—Federal Aid to Airports
- Part 153—Acquisition of U.S. Land for Public Airports
- Part 155—Release of Airport Property From Surplus Property Disposal Restrictions
- Part 157—Notice of Construction, Alteration, or Deactivation of Airports
- Part 159—National Capital Airports
- Part 161—Cold Bay, Alaska, Airport
- Part 163—Canton Island Airport
- Part 165—Wake Island Code

Subchapter K—Administrative Regulations
- Part 181—Seal
- Part 183—Representatives of the Administrator
- Part 185—Testimony by Employees and Production of Records in Legal Proceedings
- Part 187—Fees for Copying and Certifying Federal Aviation Agency Records
- Part 189—Use of Federal Aviation Agency Communications Systems

The four Chapters to be completed are:

Subchapter C—Aircraft
- Part 21—Aircraft Certification Procedures
- Part 23—Airworthiness Standards: Normal, Utility, and Acrobatic Category Airplanes
- Part 25—Airworthiness Standards: Transport Category Airplanes
- Part 27—Airworthiness Standards: Normal Rotorcraft
- Part 29—Airworthiness Standards: Transport Rotorcraft
- Part 33—Airworthiness Standards: Aircraft Engines
- Part 35—Airworthiness Standards: Propellers
- Part 37—Technical Standard Orders for Materials, Parts, and Appliances
- Part 39—Airworthiness Directives
- Part 41—Airworthiness Operating and Equipment Standards
- Part 43—Maintenance and Alteration
- Part 45—Identification and Registration Marking
- Part 47—Aircraft Registration
- Part 49—Recording of Aircraft Title and Security Documents

Subchapter F—Air Traffic and General Operating Rules
- Part 91—Operating Rules
- Part 93—Special Airport Traffic Patterns and Rules
- Part 95—Minimum IFR Altitudes
- Part 97—Standard Instrument Approach Procedures
- Part 99—Security Control of Air Traffic
- Part 101—Moored Balloons and Kites
- Part 103—Transportation of Dangerous Articles and Magnetized Materials
- Part 105—Parachute Jumping

Subchapter G—Air Carrier and Commercial Operator Certification and Operations
- Part 121—Certification of Air Carriers and Commercial Operators
- Part 123—Operations of Scheduled Interstate Air Carriers
- Part 127—Operations of Supplemental Air Carriers and Commercial Operators
- Part 129—Operations of Foreign Air Carriers

Subchapter J—Air Navigational Facilities
- Part 171—Use of Domestic Non-Federal Navigation Facilities

Guide Published for Disaster Control at Nation's Airports

Protection and operation of U. S. airports under an enemy attack is the subject of a new guide to assist airport operators in their planning.

Applicable to all sizes of airports, the **Airport Disaster Control Guide** outlines steps to be taken so that airports can continue to function in case of an attack. The guide is now available at no charge to airport managers through FAA Airport District Offices. Special briefings to acquaint communities with the importance of pre-emergency planning will be conducted in conjunction with the distribution of the 36-page booklet.

The guide was compiled because airports, including smaller fields, would be critical to national recovery in a post-attack period. Some experts assert that the smaller airports able to handle the general aviation fleet will assume greater importance in time of war. The guide provides technical guidance to help insure continued operations in a national emergency. It outlines the positive steps that can be taken today, in cooperation with local government and defense agencies, to reduce or avoid problems of post-attack recovery.

The guide suggests assessing existing airport facilities and making an inventory of equipment, as well as acquiring devices for detecting radioactivity. It shows how to plan an airport disaster control organization and urges periodic training of airport personnel. It covers information on warning systems, recommends fallout shelters for protecting airport employees and transients, and the acquisition of special emergency equipment and supplies needed in case of disaster. Such areas as evaluating and reducing the vulnerability of airports to attack and other emergency conditions are covered.

The **Airport Disaster Control Guide** was prepared in response to an Executive Order issued by President Kennedy in February, 1962, assigning the Federal Aviation Agency emergency preparedness functions, which included plans and programs covering the emergency management of the nation's civil airports.

First application of the guide was made at Wold Chamberlain Field serving Minneapolis-St. Paul. A sample plan was prepared by the FAA Airports Service in cooperation with the Minneapolis-St. Paul Metropolitan Airport Commission and coordinated with various civil defense agencies.

In addition, an employee emergency handbook was also prepared at the Twin-City airport. This booklet gives airport workers quick reference to emergency information such as warning signals, shelter locations, routes and assignments. It is anticipated that plans modeled after that of Wold Chamberlain will be developed by other airports across the country. FAA Airport District Engineers are available to assist local communities in drawing up disaster plans.

The airport disaster control project is one of a series of actions taken by the FAA to develop a state of readiness within the civil aviation industry.

Air Defense Identification Zone Established in Puerto Rico Area

Until further notice, civil pilots flying within a 150-mile radius of the San Juan, Puerto Rico, radio beacon must file flight plans and report their positions to air traffic control facilities in the area when operating into or out of Puerto Rico or the U. S. Virgin Islands.

The Federal Aviation Agency established an ADIZ (Air Defense Identification Zone) on November 3 covering this area in order to protect air commerce and strengthen national security. Call letters of the San Juan beacon are SJU.

The ADIZ, the ninth now in operation outside the continental U. S., excludes the airspace over the land and territorial waters of the Dominican Republic and the Islands of Puerto Rico, Vieques, St. Croix, St. Thomas, Tortola, Virgin Gorda and Anegada.

New Agency Rulemaking Policy Increases Public Participation

A new FAA rulemaking policy invites increased public participation during an earlier stage in the rulemaking process.

The policy calls for issuing an "Advance Notice of Proposed Rulemaking" when the Agency finds it helpful to secure the public's views on possible courses of action on a proposed rule.

This would take place in those situations when the Agency isn't ready to propose a rule after studying a problem, and would like to have public comments and views on alternate solutions.

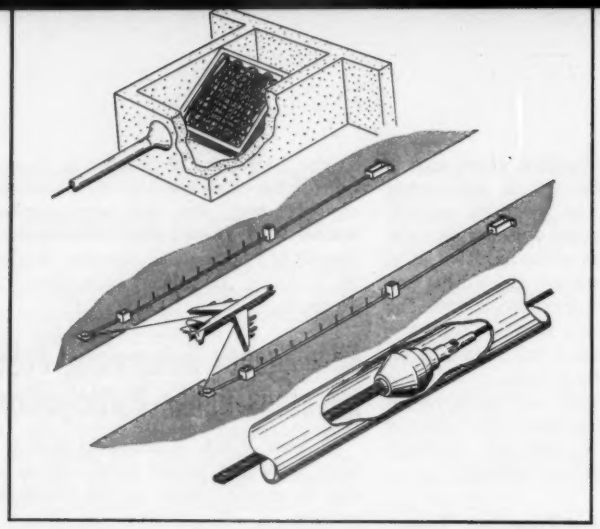
The new policy does not change the existing methods of obtaining public participation in rulemaking, including conferences, meetings and hearings. It is a provision for obtaining added meaningful public participation.

FAA'S CONTROL TOWER OF THE FUTURE

A new standard design for future airport control towers has been developed for FAA by the architectural firm of I. M. Pei and Associates.

Representing a striking departure from the usual government architecture, the free-standing tower (see model) *will stand apart from airport terminals and other buildings. It provides controllers with greater visibility from the pentagon-shaped cab on top, improved space for radio and radar equipment, and a better working environment. Varying in height from 50 to 150 feet, depending on the type and amount of airport activity, the tower provides room at its base for future expansion. This economical design eliminates the need to relocate the tower if additional space is needed at any time in the future.*

FAA plans to build about 70 of these towers over the next three years.



Hook-equipped airliner halted by arresting gear cable. Piston in water-filled cylinder provides braking action; rope retrieves cable after an arrestment.

RUNWAY

FAA last month completed a series of 45 test-arrests of aircraft using experimental transport-type runway arresting gear.

Boeing 720 and Convair C-131 aircraft took part in the tests at FAA's National Aviation Facilities Experimental Center (NAFEC), Atlantic City, N. J. The 720, a four-engine jet, was arrested 35 times. The C-131, a two-engine piston plane, was arrested 10 times.

Aim of this FAA program has been to test the feasibility of developing equipment to halt modern transport aircraft weighing more than 300,000 pounds at speeds over 130 knots.

FAA work in this program over the past four years was built upon a foundation of military experience gained by the Navy and Air Force. But equipment for civil use must be of far higher capacity and capable of smoother arrestment. Today's transport aircraft are some six times the weight of the average fighter plane.

Arresting gear used in this feasibility testing was Model 3500, water-squeezer-type equipment produced for FAA under contract by the All American Engineering Company, Wilmington, Del. Contract effort in the program to date totals a little over $1 million.

This equipment is composed of a cable stretched across the runway and connected to water cylinders buried at each side of the runway. Braking force in arrestment is provided by pistons in the cylinders dragging through the water. After "taking" the cable, the plane moves up to 1,600 feet along the runway before coming to a full stop.

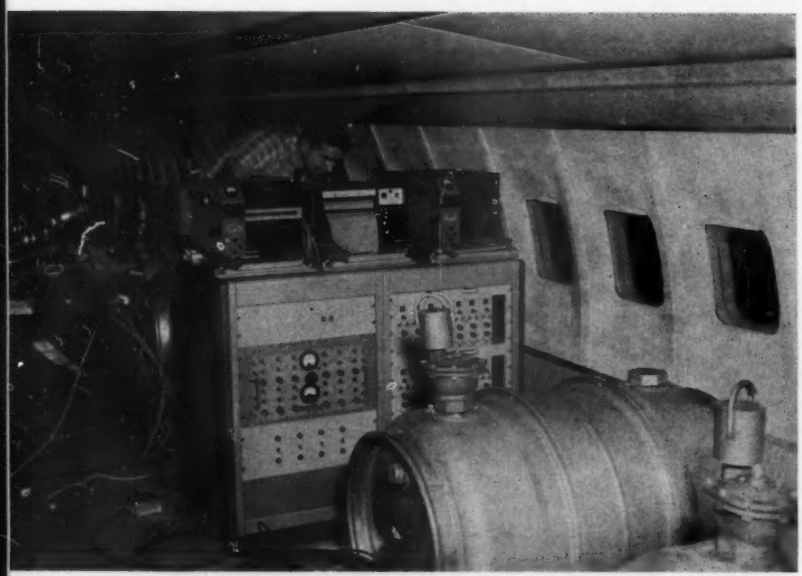
The two Agency planes were fitted with tailhooks to engage the arresting gear cable and to test instrumentation. The hook was developed earlier in the arresting gear program.

In a previous test series, the arresting equipment underwent extensive dead-load testing at the Sussex County Airport, Georgetown, Del. Heavy loads of cement blocks riding on flatcars were accelerated along a runway and halted by the gear. Loads of 350,000 pounds were arrested at speeds up to 115 knots. Top speed, 135 knots, was recorded with a dead load of 200,000 pounds.

Top weight of the 720 airplane in the aircraft-arrestment series was 220,000 pounds. The plane at this weight was arrested at speeds up to 120 knots. Top speed in the aircraft-arrestments, 130 knots, was recorded at an aircraft weight of 135,000 pounds.

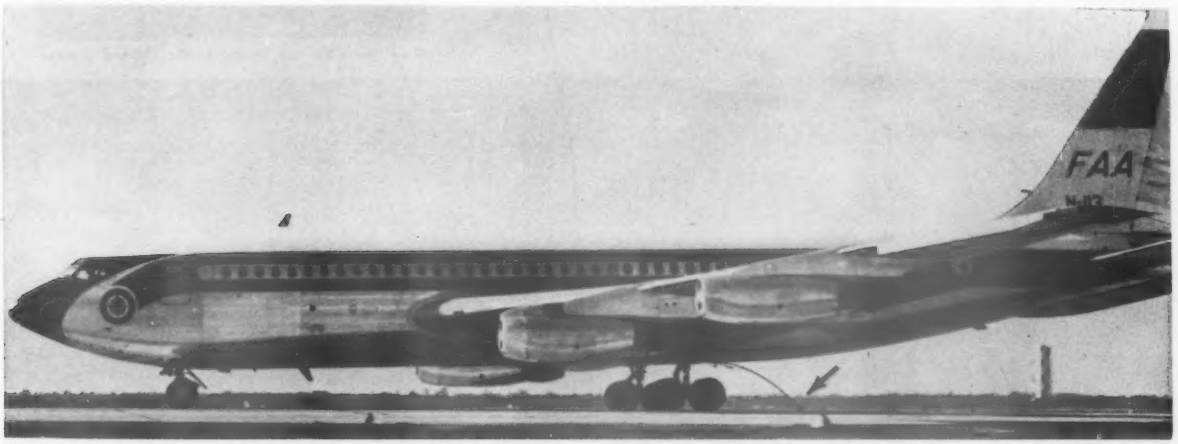
These were first FAA tests that used aircraft to evaluate the feasibility of a transport arresting gear system. In 1960 and 1961, aircraft were used to test the feasibility of tailhook engagement with runway cables.

FAA evaluation of data collected in the arresting gear feasibility tests is expected to be completed by some time in the spring of 1963.

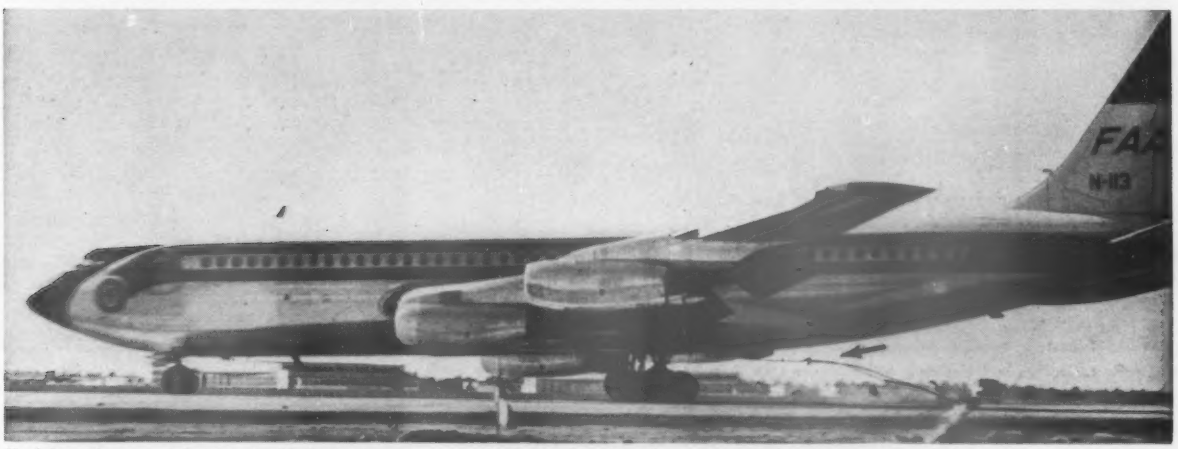


Above, interior of arresting gear test airplane, Boeing 720, showing ballast water tanks and tensiometer to measure stresses. Below, close-up of the arresting hook.

Y ARRESTING GEAR TESTED

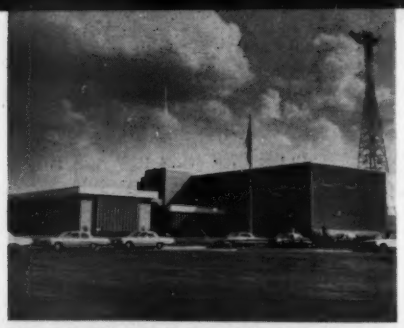


Four-engine jet plane, its hook in a down position, lands during series of arresting gear feasibility runs at FAA test center, Atlantic City, N.J.



Hook has taken gear (*above*) and cable begins to pay out, transferring braking force from water cylinders. *Bottom*, arrested plane slows to stop on runway.

Air Route Traffic Control Center:



New Memphis Air Route Traffic Control Center.

Vital

Air traffic controllers and electronic technicians are on duty 24 hours a day in Air Route Traffic Control Centers to keep traffic moving safely and swiftly.

Above, Honolulu Center built on an unusual site—the crater of an extinct volcano. *Below,* traffic controllers at flight progress boards. *Right,* microwave relay tower.

Link in Airspace Safety Is Modernized

A major FAA streamlining of a basic link in the Nation's airspace utilization system—the Air Route Traffic Control Center (ARTCC)—is more than half-way toward its goal.

The $100 million Center construction program will provide both controller and pilot the most efficient environment to accomplish their mutual aims of moving traffic safely and expeditiously.

Along with new buildings and equipment, Center control areas are being consolidated and realigned, nine Centers are being phased out, and one new Center will be established.

To the general aviation pilot who flies Instrument Flight Rules (IFR), FAA's new Center program is as significant as it is to the airlines. Statistics indicate that more and more private, business and commercial pilots are using Center services. The big increase in future traffic is expected to lie in general aviation more than airline or military traffic. Center services are available as a matter of routine to the IFR pilot. In an emergency, a Center will assist, through radar or other means, a Visual Flight Rules (VFR) pilot.

Basically, a Center's services and responsibilities are to maintain safe distances between aircraft operating on an air traffic control clearance in the airspace controlled by the Center. Among other things, the clearance is based on an agreement between pilot and controller that the flight will be conducted under Instrument Flight Rules regardless of actual weather conditions.

An IFR flight plan may be filed by any pilot who is instrument-qualified and whose aircraft is equipped to operate in instrument weather. The airline pilot files his IFR flight plan through his company dispatcher. The general aviation pilot may file through an FAA Flight Service Station (FSS). Pilot and company dispatcher or FSS pilot-briefer work up the plan after considering such items as weather, winds aloft, fuel and other load factors. A desired route is decided on along with altitude, speed, destination, alternate airport, etc.

Some 30 minutes to an hour prior to the desired take-off time, the dispatcher or station pilot-briefer, through interphone or teletype, files the flight plan with the Center in whose area the flight will originate. A flight data assistant controller receiving the flight plan proceeds to make up a number of flight progress strips for the flight through the Center's area. A strip is made up for each reporting point—a radio fix—in the Center's area over which the plane will fly and report to the Center. Each strip will indicate aircraft identity, destination, altitude, route, and other essential items.

The strips are posted by the flight data man on flight progress boards facing sector controllers. A Center's control area is divided into a number of sectors depending upon the amount of traffic normally handled by the Center.

The number of controllers assigned to each sector may vary from one to three or four, again depending upon the amount of traffic flying through the sector. During slow periods the sector may be manned by one controller. During busier hours the same sector is manned by two or three controllers. One man will general work radar, another radio, and a third will assist in other necessary details.

When the company dispatcher forwards the flight plan to the Center, he sends duplicate information to the air traffic control tower. When the pilot is ready to go, he radios the tower and requests taxiing clearance. If the tower is not confronted with any departure delays, it contacts the Center and asks for a departure clearance for the flight. The Center then analyzes all other flights that may be operating, or planning to operate, in the general vicinity of the flight's proposed route. After resolving all possible conflicts, the Center forwards a clearance to the tower for releasing the flight.

The Center's clearance may reflect the pilot's requested route or it may give him a different route or altitude. The departure controller in the tower will then analyze the local traffic situation and at the proper time authorize the local controller in the tower cab to clear the plane for take-off.

The time of departure is relayed by the tower to the Center where the flight data man notes the departure time on each progress strip. The sector controllers, in turn, compute the time when the plane would be flying over the fix or fixes within the particular sector, and pencil in this estimate on their respective strips for the flight.

The tower retains control of the plan, designating route of departure to be used and providing radar vectors, if necessary, until the plane is clear of the tower's local control area and picked up by the initial sector controller in the Center. Approximately 30 minutes before the plane is expected to leave the Center's area, the Center forwards information on that flight to the adjacent Center and the process of filling out strips is repeated.

When radar is used to supplement the basic flight strip system, airplanes within 40 miles of the radar antenna are separated by a minimum of three nautical miles laterally and longitudinally. When airplanes are 40 or more nautical miles from an antenna, however, the separation is increased to five miles. The long range radars used by ARTC Centers are located at strategic points across the country and are tied in with the Centers by microwave links.

Traffic not handled by radar is separated vertically by 1,000 feet at altitudes below 29,000 feet and by 2,000 feet above that altitude. All aircraft under non-radar control flying at the same altitudes are spaced longitudinally by 10 minutes in time.

As a general rule, major airlines fly IFR above 5,000 feet regardless of the weather in order to take advantage of the greater protection involved. Below 10,000 feet, a carrier may elect on occasion to fly VFR if he expects to encounter excessive delays.

The second type of flying—conducted under Visual Flight Rules (VFR)—is done only in good weather. Under VFR, the pilot is on his own as far as separation is concerned. It is up to him to "see and be seen." VFR pilots may file flight plans too, but with another FAA facility—the Flight Service Station—and the flight is monitored by each Station along the plane's path of flight.

Because good weather is sometimes mixed with bad along the route of an IFR flight, some aircraft may be flying IFR while others in the same areas are flying VFR. Since the Center has no jurisdiction over VFR flights, it is the IFR pilot's responsibility to be on the lookout in good weather

General aviation pilots get pre-flight briefing at Flight Service Station.

for VFR aircraft. However, when ceiling and visibility in a given area go below specific weather minimums, the VFR situation changes. Below 14,500 feet in controlled airspace, horizontal visibility must remain at three miles or more for VFR flying. Other VFR requirements are at least 1000 feet above nearest clouds, 500 feet below, and 2000 feet laterally. Above 14,500 feet where all airspace is controlled, horizontal visibility must be five miles or better. In uncontrolled airspace, a pilot may fly VFR with one mile of horizontal visibility, provided the other weather minimums exist.

Greater safety and efficiency will result from the Center area consolidations and realignments. There will be fewer Centers for the pilot to deal with and, therefore, a reduction in pilot-controller radio contacts and "hand-offs" between Centers. The program also means a better controller workload balance in the Centers. For the pilot, who must at all times be prepared for a quick exchange of information with the controller, there will be a better airspace environment in which to maneuver when responding to control instructions.

For the VFR pilot, the Center will continue to assist in its present functions of working with Flight Service Stations to help orient lost aircraft, either through DF (direction-finders) or radar. Centers also cooperate with military coordination centers in search-and-rescue activities.

Present Centers within the 48 contiguous states will be reduced from 29 to 21. The entire program will be completed by January, 1965. Of the 21 new Center buildings, 13 have already been completed and are in operation. They are San Antonio, Oakland, Atlanta, Cleveland, Jacksonville, Fort Worth, Kansas City, Denver, Memphis, Minneapolis, Seattle, Salt Lake City and Indianapolis.

The remaining eight Centers, beginning with Chicago, will be commissioned during the period December 1, 1962 through January 1, 1965 when Houston will be ready. Others are Albuquerque, Los Angeles, Boston, Washington, New York and Miami.

The phase-out process involving the nine deactivated Centers is already under way. The Pittsburgh Center's area was transferred to the Cleveland Center in October, 1962. Phase-out and realignments are in progress concerning these others: Spokane to Seattle, Norfolk to Washington, St. Louis to Kansas City, El Paso and Phoenix to Albuquerque, Detroit to Cleveland, and finally, New Orleans and San Antonio to Houston.

Built to a standard, economical design of reinforced concrete and steel, the new Center buldings are completely air conditioned, not only for the comfort of the personnel but also to protect the sensitive electronic equipment from temperature changes.

The main building includes an operation wing with a control room 60 feet wide and averaging 192 feet in length, plus rooms for radar, communications and electronic equipment. A two-story administration wing contains the general offices and training areas. Space is provided in a connecting section for storage, utility, workshop, locker and shower areas and a snack bar. A separate building houses two 550-kilowatt standby diesel engine generators to insure continued operation of the Center in the event of power failure.

The new Centers are designed to be completely self sufficient for a period of at least two weeks in the event of a nuclear attack. In an attack, FAA's air traffic control personnel will not be evacuated but will remain on duty to provide direct support to the North American Defense Command and other military air operations essential to the Nation's security.

Cost of the new modern Center buildings ranges between $2 and $2.5 million, depending upon the site, availability of access roads, labor and other factors. In addition, the electronic equipment is worth more than $2,000,000. It takes an average of 300 people—primarily traffic controllers, electronic engineers and technicians—to staff a Center. The average payroll is about $2,500,000 a year.

The over-all consolidation program will result in savings of more than $100 million over a period of 16 years. Experience has shown this to be the normal life span of typical air traffic control equipment and facilities. More than 1,400 FAA control, maintenance and other personnel will be relocated to those Centers that will continue operating, and the Agency will realize an estimated savings of some 540 positions as a result of the consolidation.

Controllers in towers are responsible for handling traffic around airports.

FLIGHT SERVICE SPECIALISTS QUALIFY AS CERTIFICATED WEATHER BRIEFERS

After taking intensive meteorology course, flight service specialist (*right*) instructs colleagues on the job.

General aviation pilots now are able to get an up-to-the-minute analysis of en route and terminal weather information by asking any of FAA's 338 Flight Service Stations.

A training program begun a year and a half ago has been completed, qualifying some 3,600 Flight Service Specialists as Certificated Weather Briefers. These specialists report and interpret conditions aloft in airspace served by their Stations, roughly a radius of 400 miles. Before this program was undertaken, the Flight Service Specialist merely transmitted data as it was furnished by the Weather Bureau, without analysis or interpretation.

The activities in a Flight Service Station enable the Weather Briefer to combine meteorological, aeronautical and operational information for the benefit of the individual pilot. Other services available are pre-flight briefings, flight plan assistance, flight following service, air/ground communications, search-and-rescue operations, etc.

Working from basic reports and forecasts, the Weather Briefer translates surface and upper air observations, SIGMETS (Significant Meteorological Information), advisories to small aircraft and PIREPS (Pilot Reports) into language readily understood by airmen. He also prepares and maintains symbolic weather maps and interprets and adapts incoming weather in order to suggest alternate flight routes and routes around adverse weather when necessary.

The project was carried out by FAA in cooperation with the U. S. Weather Bureau. The Weather Bureau developed the training materials, administered the examinations—one written, one oral—and issued the certificates.

FAA sent one specialist from every Flight Service Station to the Aeronautical Center in Oklahoma City for an intensive 30-day course in meteorology. Upon returning to the job, each specialist became the Station Training Officer, conducting classes and directing the home study of his colleagues.

New Station employees are eligible for the course after they have achieved the grade of Assistant Flight Service Specialist, a period of normally six months.

GENERAL AVIATION AIDS FAA IN EVALUATING NEW AIRBORNE TRANSPONDER

Owners and operators of light aircraft are joining FAA in an evaluation of general aviation transponders (GAT) designed to enhance air safety.

GAT is an airborne component of the radar beacon system which is designed to give air traffic controllers the identity of airplanes as well as their range and direction. It supplies identity through one of 64 code signals by responding to interrogation from ground equipment. The ground equipment processes the reply and displays the information on the controller's radar scope.

GAT differs from SLATE (Small Lightweight Altitude Transmission Equipment) in that it does not provide altitude information to controllers.

In a user test now under way and continuing through next May, transponders are being evaluated in a number of airplanes belonging to members of the Aircraft Owners and Pilots Association and the National Business Aircraft Association, as well as Army, Air Force and Los Angeles Airways Aircraft. In addition to Agency units installed in private and military aircraft by FAA at its National Aviation Facilities Experimental Center (NAFEC), a number of transponders sold or lent to aircraft owners by manufacturers of the equipment are being used in the tests.

The user evaluation is part of FAA's project to develop low cost, lightweight airborne radar beacon equipment for light aircraft in conjunction with the Agency's program to obtain the maximum efficiency and safety in the air traffic control system.

Information gained from the user evaluation will be employed by FAA in further determining the capability and efficiency of GAT and will furnish data for future transponder design characteristics.

GAT has already undergone extensive FAA testing and evaluation in Agency aircraft. Concurrently with the user test program, FAA will continue to evaluate a transponder in one of its own planes.

The transponders weigh 10 pounds and are designed to be effective up to at least an altitude of 15,000 feet and within a distance of 50 miles.

General aviation transponder installed in airplane.

SAFETY FIRST

Keep Your Fuel Clean

Engine failure due to fuel contamination was the probable cause of 63 general aviation accidents in 1961. Simple, routine precautions could have prevented these accidents.

This excerpt from a recent aircraft accident report is very revealing: "*. . . Subsequent examination of the engine and its components revealed large deposits of foreign material, sediment and water in the fuel strainer, carburetor bowl and fuel pumps in sufficient quantities to cause stoppage . . . Probable cause of the accident: Inadequate preflight action by the pilot; subsequent engine failure due to fuel contamination. . . .*"

There are many pilots who do not take the proper precautions to avoid fuel contamination, as evidenced by the alarming increase in the number of accidents caused by this oversight. The modern aircraft engine is a remarkably reliable mechanism—but it will not run on water, dirt particles and other noncombustibles.

■ **What causes fuel contamination?**

A. Storing the aircraft with partially filled fuel tanks may cause condensation and water contamination. You have, no doubt, often noticed moisture or dew on the outside of your aircraft early in the morning. This same moisture could form on the inside walls of your fuel tanks. Water is the worst offender in these contamination cases, and condensation inside the tank is one of the methods by which it finds its way into your fuel system.

B. Servicing the aircraft from improperly filtered tanks, particularly small tanks or drums, is another principal source of fuel contamination. This practice frequently introduces both dirt and water into the fuel system.

■ **What precautions should the pilot take to avoid fuel contamination?**

A. Preflight action: Drain a generous sample of fuel (several ounces—not just a trickle or two) into a transparent container from each of the fuel sumps. Notice that *each* of the fuel sumps is specified. This includes not only the main gascolator, but also the wing tank sumps. Examine the sample of fuel from each sump for water and dirt contamination. *Water will not mix with gasoline.* If present, it will collect at the bottom of the transparent container and will be easily detected. If water or dirt appears, continue to drain fuel from that sump until you are sure the system is clear of all water and dirt.

If your aircraft is not equipped with wing tank quick-drain petcocks, it is recommended they be installed. This can make the preflight check of the wing tank sumps much more convenient, as the frequent removal and replacement of wing tank sump drain plugs can be a time-consuming operation.

B. Post-flight action: (1) Top off your tanks at the end of the day to avoid condensation and water contamination inside your fuel tanks. Although this is a desirable procedure to follow at the end of each flying day—assuming your loading schedule for the next day will permit a full load of fuel—it is particularly important that this is done if the aircraft is to stand idle for several days, whether it is tied down out-of-doors or stored in a hangar. (2) Avoid, if possible, servicing your aircraft from small tanks or drums. Should this become necessary, the fuel should always be strained through a chamois skin that is in good condition.

C. Precautionary maintenance action: In addition to the previously discussed precautions, the following maintenance precautions should be performed on your aircraft at periodic intervals: (1) inspect and clean the tank fuel outlet finger strainer; (2) inspect and clean the inlet carburetor screen; (3) flush the carburetor bowl.

To better understand the reasons for the preflight action recommended, let's take a brief look at an actual water contamination test recently conducted by FAA.

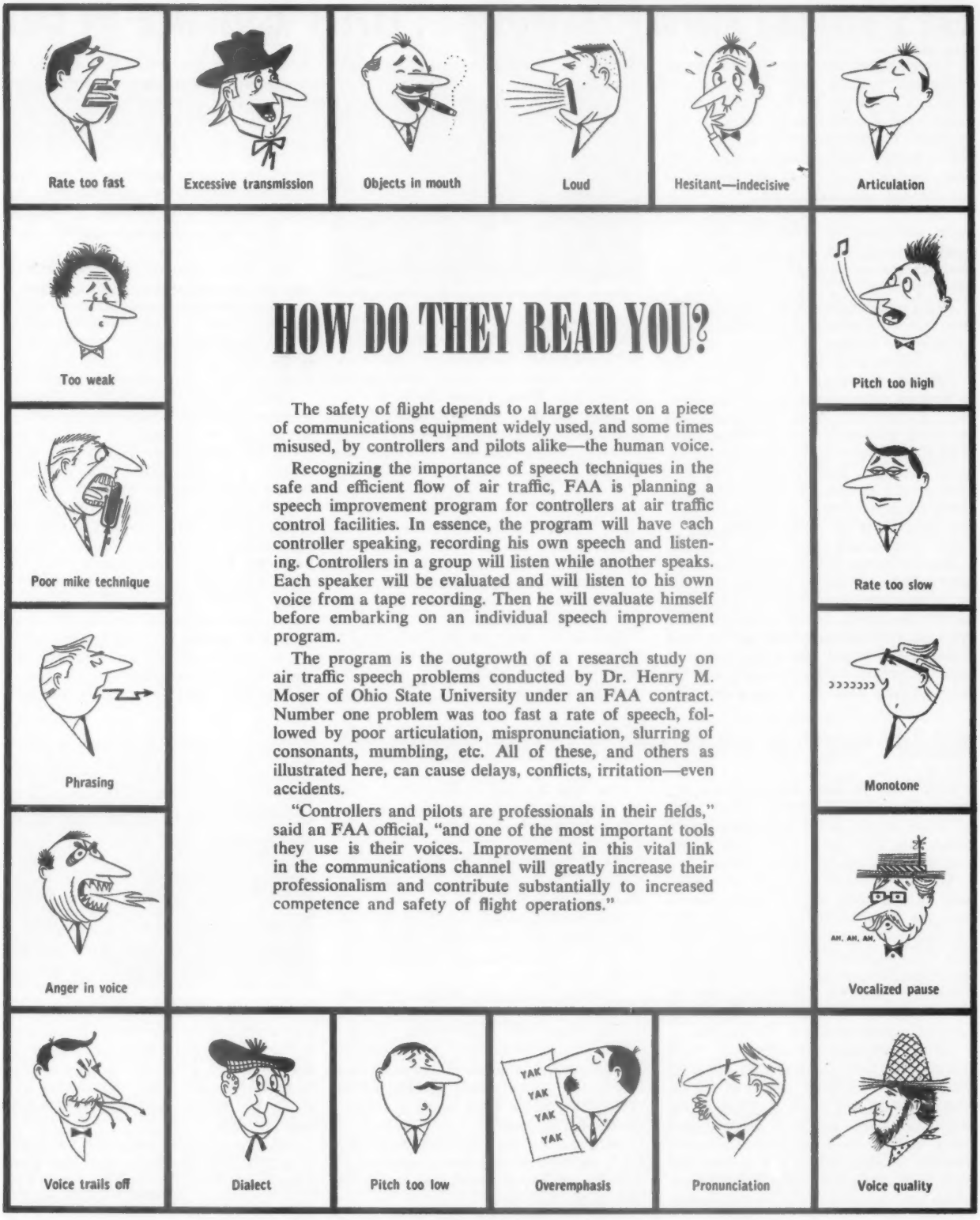
After all water was removed from the fuel system of a popular make high-wing monoplane, three gallons of water were added to the half-full fuel tank. After a few minutes, the fuel strainer (gascolator) was checked for water. It was necessary to drain ten liquid ounces of fuel before any water appeared. This is considerably more than most pilots drain when checking for water.

In a second test with the same aircraft in flying attitude—to simulate a later tricycle geared model—the fuel system was again cleared of all water. Then one gallon of water was added to the half-full tank. Upon checking the fuel strainer quick drain, more than a quart of fuel was drained before any water appeared.

In both of the above-described tests, about nine ounces of water remained in the fuel tank after the belly drain and the fuel strainer had ceased to show any trace of water. This residual water could be removed only by draining the tank sumps.

Two significant findings emerged from the above tests and from tests made on a plastic mockup of a similar fuel system:

- When water was introduced into the fuel tank, it immediately settled to the bottom, but did not flow down the fuel lines to the fuel strainer until all fuel was drained from the lines.
- Since it was found impossible to drain all water from the tank through the fuel lines, it was necessary to drain the fuel tank sumps in order to remove all water from the system.



HOW DO THEY READ YOU?

The safety of flight depends to a large extent on a piece of communications equipment widely used, and some times misused, by controllers and pilots alike—the human voice.

Recognizing the importance of speech techniques in the safe and efficient flow of air traffic, FAA is planning a speech improvement program for controllers at air traffic control facilities. In essence, the program will have each controller speaking, recording his own speech and listening. Controllers in a group will listen while another speaks. Each speaker will be evaluated and will listen to his own voice from a tape recording. Then he will evaluate himself before embarking on an individual speech improvement program.

The program is the outgrowth of a research study on air traffic speech problems conducted by Dr. Henry M. Moser of Ohio State University under an FAA contract. Number one problem was too fast a rate of speech, followed by poor articulation, mispronunciation, slurring of consonants, mumbling, etc. All of these, and others as illustrated here, can cause delays, conflicts, irritation—even accidents.

"Controllers and pilots are professionals in their fields," said an FAA official, "and one of the most important tools they use is their voices. Improvement in this vital link in the communications channel will greatly increase their professionalism and contribute substantially to increased competence and safety of flight operations."

FAA'S DISTRICT AIRPORT ENGINEER . . . EXPERT ASSISTANCE ON CALL

Communities with no airport—or inadequate airports—can get help and guidance from any of the Federal Aviation Agency's 24 District Airport Engineers (DAEs) and their staffs. Their job is to help communities, and even private owners, develop airports as part of an efficient national system.

The New River Valley Airport, fifty miles southwest of Roanoke, Va., is a good example of community-Government cooperation which produced one of these airports.

Eight communities in the Pulaski, Va., area banded together and formed a Commission to develop a regional airport. The Chairman of the Commission was a railroad man; other members included a Virginia state policeman and an attorney. Armed only with enthusiasm and a desire to provide their communities with a good airport, the Commission invited the local DAE to their meetings, seeking his advice and help. They sat down together, went over plans, discussed the desirability of various sites, topography, clear zones, etc.

The DAE helped the Commission's engineer draw up an airport master plan in accordance with FAA criteria and community needs. He then helped them draw up their initial request for Federal financial aid which asked for matching funds to purchase an airport site, and for land grading and site preparation. The

District Airport Engineer surveys airport site

request was successful. For three consecutive years, the Commission secured Federal matching funds for the development of the New River Valley Airport.

After the field was in operation, the Commission sought airline service. The DAE counseled the group as it prepared its application to the Civil Aeronautics Board for airline certification. He also provided facility records and the airport master plan for CAB review. FAA's Flight Standards Service provided the CAB with information as to the adequacy of the airport from a safety standpoint. Within a year, the new River Valley Airport had airline service.

That is the story of only one airport. Yet each DAE is on familiar terms with all airports in as many as four states—from the grass strips on up to the major terminals in his area—and spends 50 percent of his time visiting these airports. This first-hand knowledge, coupled with close liaison with state aeronautics commissions and local officials, furnishes the basis for the FAA's National Airport Plan—the yearly beginning of the Federal Aid Airport Program. Under this Plan, airports are qualified as eligible for Federal grants-in-aid—usually on a matching fund basis.

The Plan estimates the new airports and airport improvements needed over a five-year period to accommodate immediate and future national aviation requirements. Sponsors of public airports listed in the Plan, if they wish, may apply for Federal funds. The initiative is theirs.

DAE advice and consulting service also is given freely to private airport owners not eligible for Federal aid. It is not unusual for private owners to donate their airports to communities so that they may be eligible for Federal financial help.

FAA airport engineers appear frequently before civic groups and pilot organizations. Mindful of limiting factors hindering airport development—lack of vision as to the nature or extent of aviation's growth potential, lack of local funds, deficiencies in community planning and political considerations—they are on call to explain the need for adequate airports, to explain what an airport can do and what FAA can contribute.

REAL LIFE "MOLT" NO RESEMBLANCE TO FICTIONAL COUNTERPART

Last year, the FAA launched a safety poster campaign intended to remind pilots of some errors their colleagues might make, not that they themselves would ever slip into shoddy flying habits.

The poster series centered on a character named Molt, who always seems to be going about his flying the wrong way, and doing it with a disdainful yet somehow familiar sneer. Perhaps it is understandable because his creator is Robert Osborn, famed for his World War II Navy cartoons starring Dilbert, another pilot of enormous talent for trouble.

As the campaign got under way, there was a search for a short, snappy name for the pilot who faithfully serves as the example of how not to do it. FAA finally settled on Molt, and soon posters were being tacked up at airports and other aviation facilities across the nation. Our Molt soon established quite a reputation, which was deserved. Only his consistency and durability were commendable.

One day last fall in Key West, Fla., an attendant finished gassing a Cessna 172, read the pilot's credit card and did a double-take.

"Your name is Molt?", he asked.

"Yes sir. Fawdrey A. S. Molt of Miami, as it says. Why?"

The fixed base operator took his customer over to a poster and showed Mr. Molt his unintended, not entirely admirable namesake.

"Thanks," said Mr. Molt, "I've seen it."

The real Mr. Molt—pilot, aircraft owner and owner of the T-Square Miami Blueprint Company of Miami and Fort Lauderdale—was, in fact, growing a little tired of the game. Back home in Miami, he decided to mention it to FAA's Area Coordinator to find out just how long FAA intended to star him in posters all over the country and why they landed on him in the first place.

Once the purpose of the poster series

Fawdrey A. S. Molt

was explained to Mr. Molt, along with the assurance the FAA had every confidence in him *personally* but had no idea there really was a Mr. Molt when the name was picked, the Miami pilot fell in with the plan.

"If it saves a life, how could I object?" he asked. "Besides, I'll admit that since those posters started coming out, I've been watching my flying closer than I ever did before."

Letters to the Administrator

FAA

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. Please keep them brief. No anonymous letters will be used, but names will be withheld on request.

• Flight Instruction

I hold a commercial pilot certificate with single and multi-engine land ratings. Recently, I was asked by a student pilot to check his flying, but did not because I do not hold an instructor's rating. I am curious to know, however, if this kind of help is prohibited.

Lloyd C. Johnson
Sidney, N.Y.

Federal Aviation Regulations permit student pilots to receive credit for only that flight time during which they are alone in the aircraft, or are receiving flight instruction from a certificated flight instructor. Only a certificated flight instructor is authorized to prepare a student and endorse his student pilot certificate for solo and cross-country privileges. The flying time you describe cannot be credited either toward a student's solo flight privileges or his private pilot certificate.

• Log Book Procedure

As a new private pilot, I find the proper logging of flight time very confusing. What is the difference between solo time and pilot-in-command time? Under what conditions, if any, may a pilot with a single-engine rating log either co-pilot or pilot-in-command time in a multi-engine aircraft? How does a pilot substantiate the fact that he has made five takeoffs and full-stop landings in a type aircraft within the past 90 days? Should his log reflect this or is it a matter of honor that he has done so?

A.E.S.
Philadelphia

The term "solo," instead of "pilot-in-command," is used for flight time logged by a student pilot to make it clear that he may receive credit toward a private pilot certificate for only those flights during which he is alone in the aircraft or accompanied by an appropriately rated flight instructor. A private or commercial pilot may log as pilot-in-command all flight time during which he is responsible for the operation and safety of the aircraft, regardless of whether he is alone or accompanied by others in the aircraft.

A certificated private or commercial pilot with only a single-engine rating may log as pilot-in-command those flights during which he operates a multi-engine airplane in solo flight. He is prohibited from carrying passengers in such aircraft or operating them for remuneration. A certificated pilot may log as "second-in-command" flights during which he performs the duties of a second-in-command. The term "co-pilot" is not used in the new Part 61. Not more than 50 hours of such time may be applied by a private pilot toward the requirements for a commercial certificate.

Federal Aviation Regulation 61.39 provides that each pilot shall keep a reliable record of all flight time used to meet recent experience requirements. It does not specifically provide that the number of flights shall be shown in this record. A pilot who often makes fewer than five flight time entries each 90 days may find it desirable to indicate with each logbook entry the number of takeoffs and landings completed. If a pilot's recent experience is questioned, it is his own responsibility to establish his compliance. A logbook record obviously completed and certificated daily by the pilot is usually accepted without question.

• Radio Failure Procedures

Will you please clarify radio failure procedures? For example, if the last assigned altitude was 8,000 feet and the MEA (Minimum Enroute Altitude) was 8,400 feet along a certain segment, would you climb to 8,400 feet for that segment or 9,000 feet (lowest cardinal altitude above the MEA)? Does the lowest cardinal altitude apply in all conditions or just when you are not assigned an altitude/flight level in the highest route segment requested?

Floyd L. Evans, Jr.
Paramus, N.J.

It is the intent of CAR 60.49 that the lowest cardinal altitude provision applies whether or not an altitude has been assigned in the highest route segment. Therefore, in this example, it is expected that the pilot maintain 9,000 feet in lieu of 8,400 feet and then descend back to 8,000 feet when the MEA permits.

• Mechanics Training

I am interested in obtaining information regarding the training of aircraft mechanics, particularly apprenticeship programs, and will appreciate anything you may send me on the subject.

Bryce Kissinger
Hubbard, Iowa

Experience required to qualify for a mechanic certificate with airframe and/or powerplant ratings may be obtained by satisfactorily completing a course of instruction in any FAA-approved mechanic school. Acceptable experience also may be acquired by working under the supervision of a certificated mechanic, or by employment in a repair station or an aircraft manufacturing plant. It is suggested that you contact the aircraft repair stations and facilities in your area regarding apprenticeship programs. Full requirements for mechanic certification, including exams, are contained in Part 65 of the **Federal Aviation Regulations,** *available from the Superintendent of Documents, Washington 25, D.C., for 20¢.*

• Sports Jumping

I represent a group of students attending Cornell University who are interested in forming a sports parachuting club. Could you send the current FAA rules concerning non-emergency parachute jumps and any proposed changes in these?

John P. Kimball
Ithaca, N.Y.

We are sending you a copy of FAA Technical Standard Order C-23b titled Parachutes *which establishes the standards for parachutes manufactured for use in civil aircraft, and a copy of the additional proposed rules related to non-emergency parachute jumping. Other publications on the subject are available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. These are:* **Civil Aeronautics Manual 25**—*Parachute Rigger Certificates, price 15¢;* **Civil Aeronautics Manual 43**—*General Operation Rules which specify parachutes suitable for emergency use and the conditions under which an intentional parachute jump may be made, $1.25; and* **Civil Aeronautics Manual No. 54,** *covering Parachute Loft Certificates and Ratings, 10¢. Payment should accompany orders.*

• New Regulations

We would appreciate knowing if the new regulations will correspond with the old section numbers. For example, will CAR Part 43.10 now become FAR Part 91.10? We also would like some information on regulations which have not been recodified. Should CAR Part 62.5 be now referred to as FAR Part 62.5?

A. F. MacDonald
Port Credit, Ontario

The new regulations will not have the same parts and numbers designations as the current Civil Air Regulations. Existing regulations, until they are recodified as Federal Aviation Regulations, will continue to be referred to as Civil Air Regulations under the current parts designations.

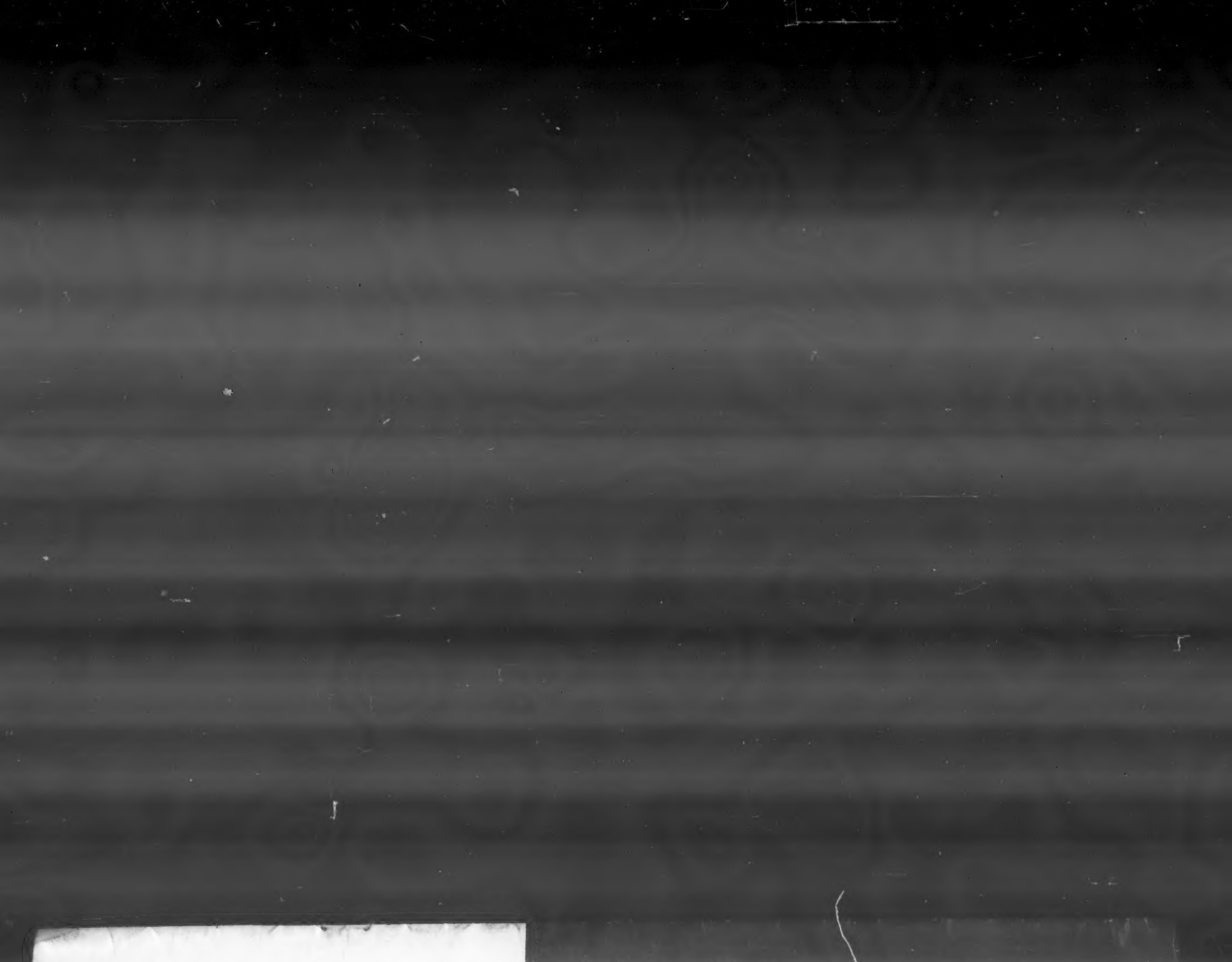
Robert Osborn's regular monthly cartoon pointing up some foibles in the air appears in its usual place on the back cover. On page 14 is the story of the real-life "Mo't," whose name inadvertently was used for Osborn's creation.

UNITED STATES
GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON 25, D.C.

OFFICIAL BUSINESS

Penalty for Private Use to Avoid
Payment of Postage, $300
(GPO)

LIBRARY

If the cockpit is your place of business . . .

Stick to business!